

Serial No: 10/024,130

Filed: 12/17/2001

Page 2 of 11

Amendments to the Claims:

1. (Canceled)
2. (Currently Amended) A method for determining plant squalene synthase activity, comprising:
 - a) contacting a reaction mixture comprising NADPH, FPP and a magnesium ion cofactor with a squalene synthase;
 - b) exposing the reaction mixture to UV light; and
 - c) detecting the emitted fluorescent light,wherein the decrease in the amount of fluorescent light corresponds to the amount of NADPH consumed in the synthesis of squalene, and
wherein the amount of squalene is correlated to the amount of NADPH consumed.
3. (Original) The method of claim 2, wherein the activity of a squalene synthase is compared to a control.
4. (Cancelled)
5. (Currently Amended) The method of claim ~~4~~ 3, wherein the plant squalene synthase is an *Arabidopsis* squalene synthase.
6. (Original) The method of claim 5, wherein *Arabidopsis* squalene synthase has the amino acid sequence of SEQ ID NO: 6.
7. (Original) The method of claim 5, wherein *Arabidopsis* squalene synthase is at least 80% identical to the amino acid sequence of SEQ ID NO: 6.
8. (Original) The method of claim 7, wherein *Arabidopsis* squalene synthase is at least 85% identical to the amino acid sequence of SEQ ID NO: 6.

Serial No: 10/024,130
Filed: 12/17/2001
Page 3 of 11

9. (Original) The method of claim 8, wherein *Arabidopsis* squalene synthase is at least 90% identical to the amino acid sequence of SEQ ID NO: 6.

10. (Original) The method of claim 9, wherein *Arabidopsis* squalene synthase is at least 95% identical to the amino acid sequence of SEQ ID NO: 6.

11. (Original) The method of claim 2, wherein the wavelength of the UV light is approximately 330-350 nm and the wavelength of the fluorescent light emission is approximately 465 nm.

12. (Original) The method of claim 2, wherein the NADPH is present in the reaction mixture at an initial concentration of 0.0005 mM to 0.5 mM.

13. (Original) The method of claim 2, wherein the magnesium ion cofactor is present in said reaction mixture at an initial concentration of 0.5 mM to 100 mM.

14. (Original) The method of claim 2, wherein the FPP is present in the reaction mixture at an initial concentration of 0.001 mM to 1 mM.

15. (Original) The method of claim 2, wherein said reaction mixture further comprises 75-150 mM phosphate buffer at a pH of 7.0-8.0.

16. (Currently Amended) A method for identifying a test compound as a ~~promoter of plant squalene synthase~~ as a candidate herbicide, comprising:

- a) contacting a reaction mixture comprising NADPH, FPP and a magnesium ion cofactor with a plant squalene synthase in the presence and in the absence of a test compound;
- b) exposing the reaction mixture to UV light; and
- c) detecting the emitted fluorescent light over time,

Serial No: 10/024,130
Filed: 12/17/2001
Page 4 of 11

wherein the decrease in the amount of fluorescent light over time corresponds to the amount of NADPH consumed in the synthesis of squalene, and

wherein the amount of squalene produced over time corresponds to the amount of NADPH consumed, and

wherein a decrease in the rate of decrease in fluorescent light emission over time in the presence, relative to the absence, of the test compound indicates that the test compound is a plant squalene synthase inhibitor and a candidate herbicide.

17-19. (Cancelled)

20. (Currently Amended) The method of claim ~~19~~ 16, wherein the plant squalene synthase is an *Arabidopsis* squalene synthase.

21. (Original) The method of claim 20, wherein the *Arabidopsis* squalene synthase has the amino acid sequence of SEQ ID NO: 6.

22. (Original) The method of claim 20, wherein the *Arabidopsis* squalene synthase is at least 90% identical to the amino acid sequence of SEQ ID NO: 6.

23. (Original) The method of claim 20, wherein the *Arabidopsis* squalene synthase is at least 95% identical to the amino acid sequence of SEQ ID NO: 6.

24. (Original) The method of claim 16, wherein the wavelength of the UV light is approximately 330-350 nm and the wavelength of the fluorescent light emission is approximately 465 nm.

25. (Original) The method of claim 16, wherein the NADPH is present in the reaction mixture at an initial concentration of 0.0005 mM to 0.5 mM.

Serial No: 10/024,130
Filed: 12/17/2001
Page 5 of 11

26. (Original) The method of claim 16, wherein the magnesium ion cofactor is present in the reaction mixture at an initial concentration of 0.5 to 100 mM.

27. (Original) The method of claim 16, wherein the FPP is present in the reaction mixture at an initial concentration of 0.001 mM to 1 mM.

28. (Original) The method of claim 16, wherein the reaction mixture further comprises 10-100 mM Tris-HCl buffer at a pH of 7.0-8.0.

29. (Previously Amended) A method for identifying compounds capable of selectively inhibiting plant squalene synthase activity, comprising:

- a) combining FPP, NADPH, a magnesium ion cofactor and a plant squalene synthase to form a reaction mixture under conditions suitable for the production of squalene in the presence and absence of a test compound;
- b) subjecting the reaction mixture to UV light and detecting fluorescent light emission over time,
- c) determining the activity of the compound to inhibit the plant squalene synthase based on the fluorescent light emission over time,
- d) repeating steps a-c using a fungal or animal squalene synthase, and
- f) identifying compounds that selectively inhibit the plant squalene synthase.

30. (Cancelled)

31. (Currently Amended) The method of claim ~~30~~ 29, wherein the plant squalene synthase is an *Arabidopsis* squalene synthase.

32. (Original) The method of claim 31, wherein the *Arabidopsis* squalene synthase has the amino acid sequence of SEQ ID NO: 6.

Serial No: 10/024,130
Filed: 12/17/2001
Page 6 of 11

33. (Original) The method of claim 31, wherein the *Arabidopsis* squalene synthase is at least 90% identical to the amino acid sequence of SEQ ID NO: 6.

34. (Original) The method of claim 31, wherein the *Arabidopsis* squalene synthase is at least 95% identical to the amino acid sequence of SEQ ID NO: 6.

35. (Original) The method of claim 29, wherein the wavelength of the UV light is approximately 330-350 nm and the wavelength of the fluorescent light emission is approximately 465 nm.

36. (Original) The method of claim 29, wherein the FPP is present in the reaction mixture at an initial concentration of 0.0001 mM to 1 mM.

37. (Original) The method of claim 29, wherein the NADPH is present in the reaction mixture at an initial concentration of 0.0005 mM to 0.5 mM.

38. (Original) The method of claim 29, wherein the magnesium ion cofactor is present in the reaction mixture at an initial concentration of 0.5 mM to 100 mM.

39. (Original) The method of claim 29, wherein the reaction mixture further comprises 10-100 mM Tris-HCl buffer at a pH of 7.0-8.0.

40-49. (Cancelled)